A system (400), device (401), and method are provided for decentralized medium access control comprising periodic beacon (600) transmissions of all active devices in beacon slots (204) (302) (303), grouping such beacon slots (204) (302) (303) in at least one contiguous dynamic beacon period (301), and expanding or shrinking this at least one contiguous dynamic beacon period (301) depending on the number of occupied beacon slots (204) (302) (303). The dynamic beacon period (301) adapts to devices (401) joining and leaving the network (400) as well as to collisions of beacon frames(600) on the medium (410).